

REPORT DOCUMENTATION PAGE			1 Form Approved OMB NO. 0704-0188		
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			5c. PROGRAM ELEMENT NUMBER 611102		
6. AUTHORS Christian M Wetzel, Audrius Alkauskas			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAMES AND ADDRESSES Gordon Research Conferences, Inc. 512 Liberty Lane  West Kingston, RI 02892 -1502			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES) U.S. Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709-2211			10. SPONSOR/MONITOR'S ACRONYM(S) ARO		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S) 65839-MS-CF.1		
12. DISTRIBUTION AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other documentation.					
14. ABSTRACT The Gordon Research Conference on DEFECTS IN SEMICONDUCTORS was held at Bentley University in Waltham, Massachusetts, August 3-8, 2014. The Conference was well-attended with 98 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students. Of the 98 attendees, 46 voluntarily responded to a general inquiry regarding ethnicity which appears on our registration forms. Of the 46 respondents, 20% were Minorities, 20% Hispanic, 26% Asian and 34% African American.					
15. SUBJECT TERMS Final Report					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Christian Wetzel
a. REPORT UU	b. ABSTRACT UU	c. THIS PAGE UU			19b. TELEPHONE NUMBER 518-276-3755

## Report Title

Final Report: 2014 Defects in Semiconductors Gordon Research Conference & Gordon Research Seminar Research area 1. Materials Science - 1.3 Physical Properties of Materials

### ABSTRACT

The Gordon Research Conference on DEFECTS IN SEMICONDUCTORS was held at Bentley University in Waltham, Massachusetts, August 3-8, 2014. The Conference was well-attended with 98 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students. Of the 98 attendees, 46 voluntarily responded to a general inquiry regarding ethnicity which appears on our registration forms. Of the 46 respondents, 30% were Minorities – 2% Hispanic, 26% Asian and 2% African American. Approximately 19% of the participants at the 2014 meeting were women.

The Gordon Research Seminar on DEFECTS IN SEMICONDUCTORS was held Bentley University, Waltham, Massachusetts, August 2-3, 2014. The Seminar was well-attended with 32 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students. Of the 32 attendees, 14 voluntarily responded to a general inquiry regarding ethnicity which appears on our registration forms. Of the 25 respondents, 14% were Minorities – 0% Hispanic, 14% Asian and 0% African American. Approximately 5% of the participants at the 2014 meeting were women.

In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field. There was a conscious effort to stimulate lively discussion about the key issues in the field today. Time for formal presentations was limited in the interest of group discussions. In order that more scientists could communicate their most recent results, poster presentation time was scheduled. Attached is a copy of the formal schedule and speaker program and the poster program. In addition to these formal interactions, "free time" was scheduled to allow informal discussions. Such discussions are fostering new collaborations and joint efforts in the field.

Thank you for your support of this Conference. As you know, in the interest of promoting the presentation of unpublished and frontier-breaking research, Gordon Research Conferences does not permit publication of meeting proceedings. If you wish any further details, please feel free to contact me. Thank you.

Sincerely,  
Christian M Wetzel, Conference Chairperson  
Rensselaer Polytechnic Institute

Sincerely,  
Audrius Alkauskas, Seminar Chairperson  
University of California Santa Barbara

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**Enter List of papers submitted or published that acknowledge ARO support from the start of the project to the date of this printing. List the papers, including journal references, in the following categories:**

**(a) Papers published in peer-reviewed journals (N/A for none)**

Received

Paper

**TOTAL:**

(b) Papers published in non-peer-reviewed journals (N/A for none)

Received

Paper

TOTAL:

Number of Papers published in non peer-reviewed journals:

(c) Presentations

Number of Presentations: 0.00

Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received

Paper

TOTAL:

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received

Paper

TOTAL:

Number of Peer-Reviewed Conference Proceeding publications (other than abstracts):

(d) Manuscripts	
<u>Received</u>	<u>Paper</u>
TOTAL:	

Number of Manuscripts:

Books	
<u>Received</u>	<u>Book</u>
TOTAL:	
<u>Received</u>	<u>Book Chapter</u>
TOTAL:	

Patents Submitted	
Patents Awarded	
Awards	

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**Graduate Students**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

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**Names of Post Doctorates**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

---

**Names of Faculty Supported**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

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**Names of Under Graduate students supported**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

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**Student Metrics**

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period: ..... 0.00

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:..... 0.00

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):..... 0.00

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense ..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields:..... 0.00

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**Names of Personnel receiving masters degrees**

<u>NAME</u>
<b>Total Number:</b>

**Names of personnel receiving PhDs**

<u>NAME</u>
<b>Total Number:</b>

**Names of other research staff**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

**Sub Contractors (DD882)**

**Inventions (DD882)**

**Scientific Progress**

**Technology Transfer**



**GORDON RESEARCH CONFERENCES** *frontiers of science*  
 512 Liberty Lane, West Kingston, RI 02892  
 World Wide Web: <http://www.grc.org>

**Nancy Ryan Gray, Ph.D.**  
 Director

**2014 GORDON RESEARCH CONFERENCE & SEMINAR  
 on DEFECTS IN SEMICONDUCTORS**

**FINAL PROGRESS REPORT**

ARMY RESEARCH OFFICE  
 GRANT NO. W911NF-14-1-0576

The Gordon Research Conference on DEFECTS IN SEMICONDUCTORS was held at Bentley University in Waltham, Massachusetts, August 3-8, 2014. The Conference was well-attended with 98 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students. Of the 98 attendees, 46 voluntarily responded to a general inquiry regarding ethnicity which appears on our registration forms. Of the 46 respondents, 30% were Minorities – 2% Hispanic, 26% Asian and 2% African American. Approximately 19% of the participants at the 2014 meeting were women.

The Gordon Research Seminar on DEFECTS IN SEMICONDUCTORS was held Bentley University, Waltham, Massachusetts, August 2-3, 2014. The Seminar was well-attended with 32 participants (attendees list attached). The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both U.S. and foreign scientists, senior researchers, young investigators, and students. Of the 32 attendees, 14 voluntarily responded to a general inquiry regarding ethnicity which appears on our registration forms. Of the 25 respondents, 14% were Minorities – 0% Hispanic, 14% Asian and 0% African American. Approximately 5% of the participants at the 2014 meeting were women.

In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field. There was a conscious effort to stimulate lively discussion about the key issues in the field today. Time for formal presentations was limited in the interest of group discussions. In order that more scientists could communicate their most recent results, poster presentation time was scheduled. Attached is a copy of the formal schedule and speaker program and the poster program. In addition to these formal interactions, "free time" was scheduled to allow informal discussions. Such discussions are fostering new collaborations and joint efforts in the field.

Thank you for your support of this Conference. As you know, in the interest of promoting the presentation of unpublished and frontier-breaking research, Gordon Research Conferences does not permit publication of meeting proceedings. If you wish any further details, please feel free to contact me. Thank you.

Sincerely,  
 Christian M Wetzol, Conference Chairperson  
 Rensselaer Polytechnic Institute

Sincerely,  
 Audrius Alkauskas, Seminar Chairperson  
 University of California Santa Barbara

**DEFECTS IN SEMICONDUCTORS**

August 3-8, 2014  
Bentley University  
Waltham, MA

Chair:

**Christian M. Wetzel**

Vice Chair:

**Martin Brandt**

Energy efficiency in power distribution and conversion more than ever relies on semiconductor power switching transistors, solar cells, and light emitting diodes. Be they highest voltage blocking normally-off switches for hybrid cars, ultralow cost solar collection materials or tunable color solid state lighting sources - they all have in common that primarily and foremost their performance is controlled by defects in semiconductors.

This meeting therefore aims to bring together the worldwide leading scientists on the topic as well as their hopeful aspirants to a week of off-the records intensive discussion and thought exchange. By blending lecture hall discourse, social gatherings, and sportive outings we will be able to share and learn the latest of practical and academic concern in the performance of a wide range of semiconductors.

We plan to invite leading experts from the full range of industry to academia to cover the topics of wide bandgap nitride and oxide semiconductors, the graphene-like layered materials, novel photovoltaic materials, organic semiconductors and the likes in bulk, film, or nanostructured forms. We anticipate to cover the topics of defect formation, characterization, and avoidance. This includes all relevant aspects of point, line, and cluster defects, their detection, and their relevance to the desired performance.

The meeting is scheduled for the week leading up to the **International Conference on the Physics of Semiconductors, ICPS-2014** in Austin Texas at our new location just outside of Boston, MA.

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**Contributors**



## SUNDAY

- 2:00 pm - 9:00 pm    Arrival and Check-in
- 6:00 pm                Dinner
- 7:30 pm - 7:40 pm    Welcome / Introductory Comments by GRC Site Staff
- 7:40 pm - 8:25 pm    **Power Electronics for Economy**
- Discussion Leader: **Christian Wetzel** (Rensselaer)
- 7:40 pm - 8:10 pm    **Krishna Shenai** (Argonne National Laboratory)
- "Defects in Wide Bandgap Power Semiconductors"
- 8:10 pm - 8:25 pm    Discussion
- 8:25 pm - 9:30 pm    **Organic Semiconductors for Abundance**
- 8:25 pm - 8:45 pm    Discussion Leader: **K.V. Lakshmi** (Rensselaer)
- "Introduction"
- 8:45 pm - 9:15 pm    **Alan J. Drew** (Queen Mary University London)
- "Inorganic-Organic Interfaces and Defects in Organic Spintronics"
- 9:15 pm - 9:30 pm    Discussion

## MONDAY

- 7:30 am - 8:30 am    Breakfast
- 9:00 am - 12:30 pm   **Elemental and Compound Semiconductor for Cost**
- 9:00 am - 9:10 am    Discussion Leader: **Jörg Weber** (TU Dresden)
- "Introduction"
- 9:10 am - 9:40 am    **Robert Kudrawiec** (Wrocław University of Technology)
- "Photoreflectance in Dilute III-Vs"
- 9:40 am - 9:50 am    Discussion
- 9:50 am - 10:20 am   **Nick Covern** (Newcastle University)
- "Extended Point Defects in Silicon and Germanium"
- 10:20 am - 10:30 am   Discussion
- 10:30 am                Coffee Break
- 11:00 am - 11:30 am   **Uwe Gerstmann** (University of Paderborn)
- "First Principles Calculations of Spins, Defects in Semiconductors"
- 11:30 am - 11:40 am   Discussion
- 11:40 am - 12:10 pm   **Akira Uedono** (Tsukuba University)
- "Positron Annihilation Studies in InGaN"
- 12:10 pm - 12:30 pm   Discussion

12:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<u>Poster Session I</u>
6:00 pm	Dinner
7:30 pm - 9:30 pm	<b>Magnetics for Functionality</b>
7:30 pm - 7:40 pm	Discussion Leader: <b>Tomasz Dietl</b> (Polish Academy of Science)
7:40 pm - 8:20 pm	<b>Alberta Bonanni</b> (Johannes Kepler University) "Magnetic Impurities in Nitrides"
8:20 pm - 8:35 pm	Discussion
8:35 pm - 9:15 pm	<b>Hannes Raebiger</b> (Yokohama National University) "Transition Metal Impurities in Semiconductors and Insulators"
9:15 pm - 9:30 pm	Discussion
9:30 pm	<u>Poster Session I</u> (continued)

## TUESDAY

7:30 am - 8:30 am	Breakfast
8:30 am	Group Photo
9:00 am - 12:30 pm	<b>Wide Bandgap Nitride for Efficiency</b>
9:00 am - 9:10 am	Discussion Leader: <b>Andrew Armstrong</b> (Sandia National Lab) "Introduction"
9:10 am - 9:40 am	<b>Rachel Oliver</b> (University of Cambridge) "Defects and Their Relation to Doping in GaN"
9:40 am - 9:50 am	Discussion
9:50 am - 10:20 am	<b>Benjamin Hourahine</b> (University of Strathclyde) "SEM Imaging and Theory of Dislocation in III-Nitrides"
10:20 am - 10:30 am	Discussion
10:30 am	Coffee Break
11:00 am - 11:30 am	<b>Volkmar Dierolf</b> (Lehigh University) "Eu Luminescence as a Probe of Mg Acceptors in GaN"
11:30 am - 11:40 am	Discussion
11:40 am - 12:10 pm	<b>Anelia Kakanakova</b> (Linköping University) "Doping Properties of Si and O in AlGaIn up to AlN"
12:10 pm - 12:30 pm	Discussion
12:30 pm	Lunch

1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<u>Poster Session I</u>
6:00 pm	Dinner
7:30 pm - 9:30 pm	<b>Silicon Carbide for Power</b>
	Discussion Leader: <b>Evan Glaser</b> (Naval Research Lab)
7:30 pm - 8:00 pm	<b>Bengt Svensson</b> (University of Oslo) "Defects in SiC"
8:00 pm - 8:10 pm	Discussion
8:10 pm - 8:40 pm	<b>Izabela Szlufarska</b> (University of Wisconsin) "Energy Barriers for Point Defect Reactions in 3C SiC"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	<b>Pat Lenahan</b> (Penn State University) "Interface Defects in SiO <sub>2</sub> /SiC by Spin Resonance"
9:20 pm - 9:30 pm	Discussion
9:30 pm	<u>Poster Session I</u> ( <i>continued</i> )

## WEDNESDAY

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	<b>Materials for Photovoltaics</b>
9:00 am - 9:20 am	Discussion Leader: <b>Rebecca Jones-Albertus</b> (U.S. Department of Energy) "Introduction"
9:20 am - 9:50 am	<b>Yanfa Yan</b> (University of Toledo) "Fundamental Limits to CdTe Solar Cell Efficiency"
9:50 am - 10:00 am	Discussion
10:00 am	Coffee Break
10:30 am - 11:00 am	<b>Steve Ringel</b> (Ohio State University) "Defects in Solar Cells"
11:00 am - 11:10 am	Discussion
11:10 am - 11:40 am	<b>Minjoo Larry Lee</b> (Yale University) "Defects in GeSi and Arsenide/Phosphide"
11:40 am - 11:50 am	Discussion
11:50 am - 12:20 pm	<b>Sven Rogge</b> (University of New South Wales) "Single Atom Defects Si"
12:20 pm - 12:30 pm	Discussion
12:30 pm	Lunch

1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<u>Poster Session II</u>
6:00 pm	Dinner
7:00 pm - 7:30 pm	<u>Business Meeting</u>
	<i>Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair</i>
7:30 pm - 9:30 pm	<b>Graphene and Like Materials</b>
7:30 pm - 7:50 pm	Discussion Leader: <b>Humberto Terrones</b> (Rensselaer) "Introduction"
7:50 pm - 8:25 pm	<b>Mildred Dresselhaus</b> (Massachusetts Institute of Technology) "Defects in Graphene and Related 2D Materials"
8:25 pm - 8:40 pm	Discussion
8:40 pm - 9:15 pm	<b>Ian Sharp</b> (Berkeley Labs) "New Materials and Defects for Energy Harvesting"
9:15 pm - 9:30 pm	Discussion
9:30 pm	<u>Poster Session II</u> (continued)

## THURSDAY

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	<b>Oxides, Functional, and Semiconducting</b>
9:00 am - 9:30 am	Discussion Leader: <b>Wladek Walukiewicz</b> (Berkeley Labs) "Introduction"
9:30 am - 10:00 am	<b>Darrell Schlom</b> (Cornell University) "Defects in Perovskite Gigahertz Dielectrics"
10:00 am - 10:15 am	Discussion
10:15 am	Coffee Break
10:45 am - 11:15 am	<b>Ed Seebauer</b> (University of Illinois) "Semiconducting Oxide Materials Defect Engineering"
11:15 am - 11:30 am	Discussion
11:30 am - 12:00 pm	<b>Keith McKenna</b> (University of York) "Effect of Grain Boundaries in TiO <sub>2</sub> on Electron Mobility"
12:00 pm - 12:15 pm	Discussion
12:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<u>Poster Session II</u>

6:00 pm Dinner

7:30 pm - 9:30 pm **Keynote Session**

7:30 pm - 7:50 pm Discussion Leader: **Christian Wetzel** (Rensselaer)  
"Introduction"

7:50 pm - 9:00 pm **R.A. Street** (PARC)  
"Defects in Organic Thin Films and Oxide Transistors"

9:00 pm - 9:20 pm Discussion

## FRIDAY

7:30 am - 8:30 am Breakfast

9:00 am Departure

**Defects in Semiconductors (2014)**

<b>Name</b>	<b>Organization</b>	<b>Participation</b>	<b>Status</b>
<b>Agarwal, Anuradha M</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Akey, Austin J</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Alkauskas, Audrius</b>	University of California Santa Barbara	Poster Presenter	Registered
<b>Alt, Hans-Chr.</b>	Munich University of Applied Sciences	Poster Presenter	Registered
<b>Armstrong, Andrew</b>	Sandia National Lab	Discussion Leader	Registered
<b>Baker, Brittany B</b>	Texas Tech University	Poster Presenter	Registered
<b>Bebek, Mehmet B</b>	TTU	Poster Presenter	Registered
<b>Bonanni, Alberta</b>	Johannes Kepler Univ	Speaker	Registered
<b>Brandt, Martin</b>	Technische Universität München	Vice Chair	Registered
<b>Bross, Adam S</b>	Rensselaer	Poster Presenter	Registered
<b>Caldas, Marilia J</b>	Instituto de Fisica - Universidade de São Paulo	Poster Presenter	Registered
<b>Campion, Michael J</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Ciatto, Gianluca</b>	Synchrotron SOLEIL	Poster Presenter	Registered
<b>Colleoni, Davide</b>	EPFL	Poster Presenter	Registered
<b>Corolewski, Caleb D</b>	Washington State University	Attendee	Registered
<b>Cowern, Nicholas E B</b>	Newcastle University	Speaker	Registered
<b>Dan, Yaping</b>	Shanghai Jiao Tong University	Poster Presenter	Registered
<b>Deemer, Michael J</b>	Pennsylvania State University	Attendee	Registered
<b>Dierolf, Volkmar</b>	Lehigh Univ	Speaker	Registered
<b>Dietl, Tomasz</b>	Polish Academy of Science	Discussion Leader	Registered
<b>Dresselhaus, Mildred S</b>	MIT	Speaker	Registered
<b>Drew, Alan J</b>	Queen Mary Univ London	Speaker	Registered
<b>Dreyer, Cyrus E</b>	University of California, Santa Barbara	Poster Presenter	Registered
<b>Durniak, Mark T</b>	Rensselaer Polytechnic Institute	Poster Presenter	Registered
<b>El Kaaouachi, Abdelhamid</b>	University Ibnou Zohr, Faculty of Sciences	Poster Presenter	Registered
<b>Elsaesser, David R</b>	Rensselaer Polytechnic Institute	Poster Presenter	Registered
<b>Ertekin, Elif</b>	University of Illinois	Poster Presenter	Registered
<b>Estreicher, Stefan K</b>	Texas Tech University	Attendee	Registered
<b>Fu, Kai-Mei C</b>	University of Washington	Poster Presenter	Registered
<b>Gerstmann, Uwe</b>	University of Paderborn	Speaker	Registered
<b>Gibbons, Terrance M</b>	Texas Tech University	Poster Presenter	Registered
<b>Glaser, Evan R</b>	Naval Research Laboratory	Discussion Leader	Registered
<b>Hernandez, Natalie L</b>	Lehigh University	Poster Presenter	Registered
<b>Hourahine, Ben</b>	University of Strathclyde	Speaker	Registered
<b>Ivady, Viktor</b>	Wigner Research Centre for Physics	Poster Presenter	Registered
<b>Jamal, Hemine</b>	Faculty of Sciences and Technology	Poster Presenter	Registered
<b>Jaramillo, Rafael</b>	MIT	Poster Presenter	Registered
<b>Jones-Albertus, Rebecca</b>	Department of Energy	Discussion Leader	Registered
<b>Kakanakova, Anelia</b>	Linköping University	Speaker	Registered
<b>Kim, Yong-Sung</b>	Korea Research Institute of Standards and Science	Poster Presenter	Registered
<b>Klimov, Paul V</b>	University of Chicago - IME	Poster Presenter	Registered
<b>Kropman, Daniel</b>	Tallinn University of Technology	Poster Presenter	Registered
<b>Kudrawiec, Robert</b>	Wroclaw University of Technology	Speaker	Registered

<b>Lakshmi, K V</b>	Rensselaer Polytechnic Institute	Speaker	Registered
<b>Lee, Jong-Sook</b>	Chonnam National University	Poster Presenter	Registered
<b>Lee, Minjoo Larry</b>	Yale University	Speaker	Registered
<b>Lenahan, Patrick M</b>	Pennsylvania State University	Speaker	Registered
<b>Li, Yufeng</b>	Xi'an Jiaotong University	Poster Presenter	Registered
<b>Lichti, Roger L</b>	Texas Tech University	Poster Presenter	Registered
<b>Linez, Florence F</b>	Aalto University	Poster Presenter	Registered
<b>Liu, Zhengjun</b>	Aalto University	Poster Presenter	Registered
<b>McCluskey, Matt</b>	Washington State University	Poster Presenter	Registered
<b>McCrary, Duane J</b>	Pennsylvania State University	Poster Presenter	Registered
<b>McKenna, Keith</b>	University of York	Speaker	Registered
<b>Mengyan, Rick W</b>	Texas Tech University	Poster Presenter	Registered
<b>Miceli, Giacomo</b>	Ecole polytechnique fédérale de Lausanne (EPFL)	Poster Presenter	Registered
<b>Monmeyran, Corentin P</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Mukherjee, Kunal</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Murphy, John</b>	University of Warwick	Poster Presenter	Registered
<b>Nanishi, Yasushi</b>	Ritsumeikan University	Poster Presenter	Registered
<b>Nukala, Pavan</b>	University of Pennsylvania	Poster Presenter	Registered
<b>Occena, Jordan</b>	University of Michigan	Poster Presenter	Registered
<b>Oliver, Rachel</b>	University of Cambridge	Speaker	Registered
<b>Osayemwenre, Gilbert</b>	Fort Hare Institute of Technology (FHIT)	Poster Presenter	Registered
<b>Patel, Neil</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Qin, Ying</b>	Lehigh University	Poster Presenter	Registered
<b>Raebiger, Hannes</b>	Yokohama National Univ	Speaker	Registered
<b>Ringel, Steven</b>	Ohio State University	Speaker	Registered
<b>Rogge, Sven</b>	Univ New South Wales	Speaker	Registered
<b>Schlom, Darrell G</b>	Cornell University	Speaker	Registered
<b>Seebauer, Edmund G</b>	University of Illinois	Speaker	Registered
<b>Segercrantz, Natalie</b>	Aalto University	Poster Presenter	Registered
<b>Sharp, Ian D</b>	Joint Center for Artificial Photosynthesis, LBNL	Speaker	Registered
<b>Sheinai, Krishna</b>	Argonne National Laboratory	Speaker	Registered
<b>Stavola, Michael J</b>	Lehigh University	Poster Presenter	Registered
<b>Street, Robert A</b>	Palo Alto Research Center	Speaker	Registered
<b>Svensson, Bengt</b>	University of Oslo	Speaker	Registered
<b>Szlufarska, Izabela</b>	University of Wisconsin-Madison	Speaker	Registered
<b>Terrones, Humberto</b>	Rensselaer polytechnic Institute	Discussion Leader	Registered
<b>Tuomisto, Filip</b>	Aalto University	Poster Presenter	Registered
<b>Uedono, Akira</b>	Division of Applied Physics, University of Tsukuba	Speaker	Registered
<b>Ventura, Cecilia I</b>	Centro Atomico Bariloche (CONICET) - UNRN	Poster Presenter	Registered
<b>Walukiewicz, Wladek</b>	Lawrence Berkeley National Lab	Discussion Leader	Registered
<b>Weber, Joerg</b>	TU Dresden	Discussion Leader	Registered
<b>Wei, Su-Huai</b>	National Renewable Energy Laboratory	Attendee	Registered
<b>Weiser, Philip M</b>	Lehigh University	Poster Presenter	Registered
<b>Wells, Nathan P</b>	The Aerospace Corporation	Poster Presenter	Registered
<b>Wetzel, Christian M</b>	Rensselaer Polytechnic Institute	Chair	Registered

<b>Woon, Wei Yen</b>	National Central University	Poster Presenter	Registered
<b>Xie, Weiyu</b>	Rensselaer Polytechnic Institute	Poster Presenter	Registered
<b>Yamada-Kaneta, Hiroshi</b>	Kyushu Institute of Technology	Attendee	Registered
<b>Yan, Yanfa</b>	University of Toledo	Speaker	Registered
<b>Yin, Weikai</b>	Lehigh University	Poster Presenter	Registered
<b>Yu, Jaehyung</b>	University of Illinois at Urbana Champaign	Attendee	Registered
<b>Yu, Liping</b>	University of Colorado Boulder	Poster Presenter	Registered
<b>Zakutayev, Andriy</b>	National Renewable Energy Laboratory	Poster Presenter	Registered
<b>Zhang, Shengbai</b>	Rensselaer Polytechnic Institute	Attendee	Registered
<b>Zvanut, Mary Ellen</b>	University of Alabama at Birmingham	Poster Presenter	Registered
<b>98 Attendees</b>			



## DEFECTS IN SEMICONDUCTORS (GRS)

August 2-3, 2014  
Bentley University  
Waltham, MA

Chair:  
**Audrius Alkauskas**

Associate Chair:  
**Mark T. Durniak**

The GRS on Defects in Semiconductors, to be held for the first time, is a unique forum for graduate students, post-docs, and other scientists with comparable levels of experience to present and exchange new data and cutting edge ideas in this important field.

The focus of this particular meeting will be defects in wide band-gap semiconductors, nanostructured materials, including novel two-dimensional systems, as well as defects for quantum information processing and metrology applications. The program will include a mentorship session on the transfer of knowledge and technology from academia to industry.

## Contributors



## SATURDAY

- |                   |  |
|-------------------|--|
| 1:00 pm - 5:00 pm | Arrival and Check-in   |
| 3:30 pm - 3:45 pm | Introductory Comments by GRC Site Staff / Welcome by the GRS Conference Chair      |
| 3:45 pm - 4:30 pm | <b>Experimental Studies of Defects</b>   |
|                   | Discussion Leader: <b>Rafael Jaramillo</b> (Massachusetts Institute of Technology) |
| 3:45 pm - 4:15 pm | <b>Joerg Weber</b> (TU Dresden)  |
| 4:15 pm - 4:30 pm | Discussion   |
| 4:30 pm - 6:00 pm | <u>Poster Session I</u>  |
| 6:00 pm           | Dinner   |

7:30 pm - 9:30 pm	<b>Defects in Compound Semiconductors</b>
	Discussion Leader: <b>Florence Linez</b> (Aalto University)
7:30 pm - 7:50 pm	<b>Kunal Mukherjee</b> (Massachusetts Institute of Technology) "Epitaxy and Characterization of Lattice-Mismatched AlInP Heterostructures for Light Emission"
7:50 pm - 8:00 pm	Discussion
8:00 pm - 8:20 pm	<b>Natalie Segercrantz</b> (Aalto University) "The Effect of the Growth Method on the Defect Concentrations in GaSb"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 8:50 pm	<b>Qi Li</b> (Wake Forest University) "Defects and Carrier Transport/Recombination in Materials for Scintillation Gamma Spectroscopy"
8:50 pm - 9:00 pm	Discussion
9:00 pm - 9:20 pm	<b>Andriy Zakutayev</b> (National Renewable Energy Laboratory) "Unusual Cases of Defects in Unconventional Compound Semiconductors"
9:20 pm - 9:30 pm	Discussion

## SUNDAY

7:30 am - 8:30 am	Breakfast
9:00 am - 11:00 am	<b>Quantum Information Processing and Nanostructures</b>
	Discussion Leader: <b>Pauli Kehayias</b> (University of California Berkeley)
9:00 am - 9:20 am	<b>Marcus Doherty</b> (Australian National University) "The Quantum Age of Diamond"
9:20 am - 9:30 am	Discussion
9:30 am - 9:50 am	<b>Eva Dupont-Ferrier</b> (CNRS) "Defects in Semiconductors for Quantum Information"
9:50 am - 10:00 am	Discussion
10:00 am - 10:20 am	<b>Adam Bross</b> (Rensselaer Polytechnic Institute) "Nanopatterned Templates for Low Defect Density LEDs"
10:20 am - 10:30 am	Discussion
10:30 am - 10:50 am	<b>Paul Klimov</b> (University of Chicago) "Spins in Silicon Carbide for Quantum Technology"
10:50 am - 11:00 am	Discussion
11:00 am - 12:30 pm	<u>Poster Session II</u>

*Coffee will be served in the poster area from 11:00 am - 11:30 am*

12:30 pm Lunch

1:30 pm - 2:30 pm

### **Mentorship Session**

Discussion Leader: **Mark Durniak** (Rensselaer Polytechnic Institute)

1:30 pm - 2:10 pm **Leo Schowalter** (Crystal IS)

2:10 pm - 2:30 pm Discussion

2:30 pm - 3:00 pm Evaluation Period

*Fill in GRS Evaluation Forms*

3:00 pm Seminar Concludes

**Defects in Semiconductors (GRS) (2014)**

<b>Name</b>	<b>Organization</b>	<b>Participation</b>	<b>Status</b>
<b>Alkauskas, Audrius</b>	University of California Santa Barbara	Chair	Registered
<b>Bross, Adam S</b>	Rensselaer	Speaker	Registered
<b>Campion, Michael J</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Corolewski, Caleb D</b>	Washington State University	Poster Presenter	Registered
<b>Diallo, Ibrahima C</b>	Virginia Commonwealth University	Poster Presenter	Registered
<b>Doherty, Marcus W</b>	Australian National University	Speaker	Registered
<b>Dreyer, Cyrus E</b>	University of California, Santa Barbara	Poster Presenter	Registered
<b>Dupont-Ferrier, Eva</b>	CNRS	Speaker	Registered
<b>Durniak, Mark T</b>	Rensselaer Polytechnic Institute	Chair	Registered
<b>Elsaesser, David R</b>	Rensselaer Polytechnic Institute	Poster Presenter	Registered
<b>Ivady, Viktor</b>	Wigner Research Centre for Physics	Poster Presenter	Registered
<b>Jaramillo, Rafael</b>	MIT	Discussion Leader	Registered
<b>Kehayias, Pauli</b>	UC Berkeley Physics Dept	Discussion Leader	Registered
<b>Klimov, Paul V</b>	University of Chicago - IME	Speaker	Registered
<b>Kropman, Daniel</b>	Tallinn University of Technology	Poster Presenter	Registered
<b>Li, Qi</b>	Wake Forest University	Speaker	Registered
<b>Linez, Florence F</b>	Aalto University	Discussion Leader	Registered
<b>Londero, Elisa</b>	Wigner Research Centre for Physics	Poster Presenter	Registered
<b>McNamara, Joy D</b>	Virginia Commonwealth University	Poster Presenter	Registered
<b>Monmeyran, Corentin P</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Mukherjee, Kunal</b>	Massachusetts Institute of Technology	Speaker	Registered
<b>Nukala, Pavan</b>	University of Pennsylvania	Poster Presenter	Registered
<b>Occena, Jordan</b>	University of Michigan	Poster Presenter	Registered
<b>Patel, Neil</b>	Massachusetts Institute of Technology	Poster Presenter	Registered
<b>Schowalter, Leo J</b>	Crystal IS	Speaker	Registered
<b>Segercrantz, Natalie</b>	Aalto University	Speaker	Registered
<b>Tuomisto, Filip</b>	Aalto University	Poster Presenter	Registered
<b>Uedono, Akira</b>	Division of Applied Physics, University of Tsukuba	Poster Presenter	Registered
<b>Weber, Joerg</b>	TU Dresden	Speaker	Registered
<b>Wells, Nathan P</b>	The Aerospace Corporation	Poster Presenter	Registered
<b>Xie, Weiyu</b>	Rensselaer Polytechnic Institute	Poster Presenter	Registered
<b>Zakutayev, Andriy</b>	National Renewable Energy Laboratory	Speaker	Registered

**32 Attendees**